January 1970

Test 1058: Case 770 Power Shift Diesel

Tractor Museum
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NEBRASKA TRACTOR TEST 1058 – CASE 770 POWER SHIFT DIESEL

POWER TAKE-OFF PERFORMANCE

	Hp	Crank-shaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Air wet bulb	Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION									
Rated Engine Speed—Two Hours (PTO Speed—538 rpm)									
	56.77	1900	3.765	0.457	15.08	202	57	75	28.727
VARYING POWER AND FUEL CONSUMPTION—Two Hours									
	49.78	1958	3.332	0.461	14.94	200	56	74	.....
	0.00	2102	1.180	.....	.....	190	55	73	.....
	25.75	2027	2.195	0.587	11.73	197	55	73	.....
	57.31	1900	3.777	0.454	15.17	204	56	75	.....
	13.04	2053	1.651	0.872	7.90	192	56	74	.....
	37.94	1992	2.753	0.500	13.78	200	56	75	.....
Av	**30.64**	**2005**	**2.481**	**0.558**	**12.35**	**197**	**56**	**74**	**28.760**

DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Fuel Consumption Slip of drivers %	Gal per hr	Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool-ing med	Air wet bulb	Air dry bulb	Barometer inches of Mercury
VARYING DRAWBAR POWER AND FUEL CONSUMPTION WITH BALLAST											
Maximum Available Power—Two Hours—2nd Range High											
50.36	4388	4.30	1901	6.31	3.661	0.501	13.76	171	36	44	28.970
75% of Pull at Maximum Power—Ten Hours—2nd Range High											
41.30	3421	4.53	1964	4.51	3.284	0.548	12.58	174	37	41	29.018
50% of Pull at Maximum Power—Two Hours—2nd Range High											
28.38	2285	4.66	1993	3.24	2.581	0.626	11.00	165	40	48	29.180
MAXIMUM POWER WITH BALLAST											
40.05	7627	1.97	1970	14.70	1st Range Intermed			169	40	47	28.910
47.95	7482	2.40	1901	13.76	1st Range High			175	40	50	28.920
50.39	5614	3.37	1903	8.35	2nd Range Intermed			175	40	50	28.920
51.07	4995	3.83	1899	7.26	3rd Range Low			175	41	50	28.920
52.05	4543	4.30	1901	6.41	2nd Range High			179	40	50	28.920
51.30	3674	5.24	1901	5.07	3rd Range Intermed			180	40	50	28.920
51.13	2897	6.62	1901	4.11	3rd Range High			178	40	50	28.920
49.53	2089	8.89	1900	3.06	4th Range Low			179	40	50	28.920
MAXIMUM PULL WITHOUT BALLAST											
44.58	6843	2.44	1942	14.87	1st Range High			176	46	53	28.940

VARYING DRAWBAR PULL AND TRAVEL SPEED WITH BALLAST
2nd Range High

Pounds Pull	4543	4884	5007	5060	4985	4762
Horsepower	52.05	49.96	45.50	40.39	33.88	27.03
Crankshaft Speed rpm	1901	1709	1523	1338	1140	947
Miles Per Hour	4.30	3.84	3.41	2.99	2.55	2.13
Slip of Drivers %	6.41	7.06	7.32	7.32	7.45	6.93

TIRES, BALLAST and WEIGHT		**With Ballast**	**Without Ballast**
Rear tires	—No, size, ply & psi	Two 16.9-34; 8; 16	Two 16.9-34; 8; 16
Ballast	—Liquid	840 lb each	None
	Cast iron	None	None
Front tires	—No, size, ply & psi	Two 7.5L-15; 6; 36	Two 7.5L-15; 6; 36
Ballast	—Liquid	None	None
	Cast iron	25 lb each	None
Height of drawbar		15½ inches	16 inches
Static weight with operator—Rear		8270 lb	6590 lb
Front		2680 lb	2630 lb
Total		10950 lb	9220 lb

Department of Agricultural Engineering

Dates of Test: October 28 to November 7, 1970

Manufacturer: J. I. CASE COMPANY, RACINE, WISCONSIN

FUEL, OIL and TIME **Fuel** No 2 Diesel **Cetane No** 53.5 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8271 **Weight per gallon** 6.887 lb **Oil** SAE 30 **API service classification** MS, DS **To motor** 2.641 gal **Drained from motor** 1.809 gal **Transmission and final-drive lubricant** Case TCH oil **Total time engine was operated** 44 hours.

ENGINE **Make** Case Diesel **Type** 4 cylinder vertical **Serial No** 2315266 **Crankshaft mounted** lengthwise **Rated rpm** 1900 **Bore and stroke** 4⅛" x 5" **Compression ratio** 16.5 to 1 **Displacement** 267 cu in **Cranking system** 12 volt electric **Lubrication** pressure **Air cleaner** dry type with replaceable pleated paper element with precleaner **Oil filter** full flow replaceable cartridge **Fuel filter** replaceable primary and secondary filter cartridges **Muffler** was used **Cooling medium temperature control** thermostat.

CHASSIS **Type** standard **Serial No** 8664765 **Tread width** rear 60" to 88" front 62" to 90" **Wheel base** 101" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 29.2" Vertical distance above roadway 35.3" Horizontal distance from center of rear wheel tread 0" to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial range operator controlled power shifting **Advertised speeds mph** first 1.8 second 2.5 third 3.0 fourth 3.1 fifth 4.0 sixth 4.6 seventh 5.0 eighth 6.2 ninth 7.7 tenth 10.2 eleventh 13.7 twelfth 17.0 reverse 3.1, 5.0, 7.7, 17.0 **Clutch** multiple disc wet clutches within transmission hydraulically actuated **Brakes** dry double disc hydraulically power actuated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 147" left 147" (on concrete surface without brake) right 173" left 173" **Turning space diameter** (on concrete surface with brake applied) right 305" left 305" (on concrete surface without brake) right 355" left 355" **Belt pulley** 1108 rpm at 1900 engine rpm diam 10½" face 7¼" **Belt speed** 3045 fpm **Power take-off** 538 rpm at 1900 engine rpm.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with the SAE and ASAE test code.

First range low was not run as it was necessary to limit the pull in first range intermediate to avoid excessive wheel slippage. Second range low, fourth range intermediate and fourth range high gears were not run as test procedure requires only eight gears.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1058.

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Engineer-in-Charge

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